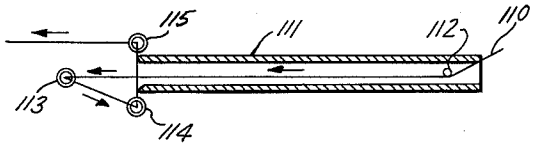
May 22, 1962 F. SCRAGG 3,035,399

HIGH SPEED FALSE TWIST DEVICES FOR TEXTILE YARNS

Filed Aug. 19, 1960

FIG. 1



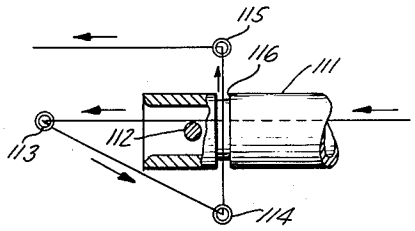


FIG. 2

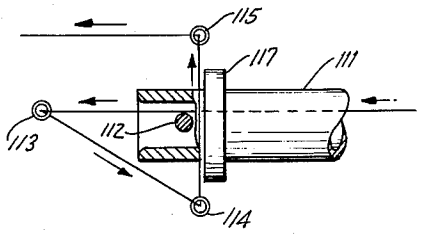


FIG. 3

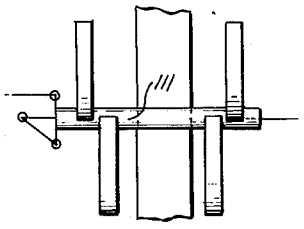


FIG. 1a

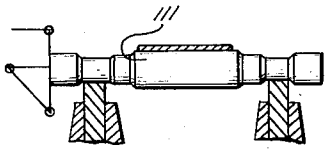


FIG. 1b

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HIGH SPEED FALSE TWIST DEVICES FOR TEXTILE YARNS

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6 Claims. (Cl. 57—77.45)

The present invention concerns high speed false twist devices of the type employed in connection with twist crimping of thermoplastic textile yarns.

An object of the invention is to provide an improvement in the construciton of such false twist devices.

The invention is more particularly concerned with false twist devices employing twist tubes located between or driven by belts or rollers in such a manner that the tube itself has no positive axial location.

In known constructions, a certain amount of difficulty is experience more particularly in connection with very high rates of application of false twist, in locating the twisting member itself in an axial direction, since the yarn which is under tension tends to shift the twisting member axially and will in fact shift the twisting member axially if steps are not taken to limit such shifting. Since the twisting member is supported by a belt or roller arrangement, it has no bearings of normal type, and hitherto it has been the practice to provide locating flanges on the twisting member itself, co-operating with one or more belts or roller edges.

Whilst such arrangements are satisfactory for moderately high rates of revolution of the said twisting members, it is advisable that a surface shall be available for the flange to rest against, which surface has a rate of movement equivalent to that of the surface of the flange, and a low rate of wear, since a certain amount of disparity of speed between the twisting member and the locating surface must of necessity arise. This amount of wear increases rapidly as the twist rate of the twisting member rises.

Another object of the invention is to provide an arrangement whereby the position of the twisting member is stabilised by means of the yarn itself which is being treated.

Yet another object of the present invention is to provide a high speed false twist device wherein a twist tube is adapted to be frictionally engaged for rotation between driving members such as belts or rollers guides being provided for leading the running yarn round to effect axial location of the tube by engaging against it or a part carried thereby whilst moving in a direction transverse to the axis of rotation of the tube.

Thus after leaving the tube the yarn may be led round and across the end of the tube; or may be led round and across a peripheral groove on the outside of the tube; or may be led round and against the end face of a flange around the tube or of a collar fitted on the tube.

Additional objects and advantages of the present invention will become apparent during the course of the following specification when taken in connection with the accompanying drawings, in which:

FIG. 1 is a diagrammatic longitudinal section of a first embodiment; and FIGS. 1*a* and 1*b* show alternative driving means therefor;

FIGS. 2 and 3 are fragmentary longitudinal elevations of a second and of a third embodiment respectively.

In a first embodiment (FIG. 1) yarn **110** after passing through the false twist tube **111** and around the pin **112** therein, is conducted round stationary guides **113**, **114** and **115** so as to pass across the end of the twist tube itself, the positioning of the yarn and its tension being such as to prevent the tube from being drawn axially out of its operating position.

In a second embodiment (FIG. 2) the yarn **110** passes after leaving the false twist tube **111**, through a series of stationary guides **113**, **114** and **115** which conduct it transversely of the tube axis and through a groove **116** formed in the end of the tube itself. Engagement of the yarn with the groove prevents the tube **111** from being drawn axially away from its supporting and driving surfaces.

Finally, in a third embodiment (FIG. 3) the yarn **110** instead of engaging with the tube end or a groove, passes across the face of a flange **117** formed on the twist tube **111** so as to perform the desired tube locating operation.

In all these constructions the pin **112** for producing the false twist could be at the opposite end of the tube; this would prevent the yarn from any tendency to oscillation as it emerged from the stabilising end of the tube.

While preferred embodiments of the invention have been shown and described herein, it is obvious that numerous additions, changes and omissions may be made in the structure and form of the illustrated embodiments without departing from the spirit and scope of the invention.

I claim:

1. In a high speed false twist assembly, in combination, rotary yarn twisting means including an elongated twist tube which tends to shift axially during twisting of yarn passing through said tube; rotating means cooperating with said tube of said twist means for rotating said tube while freeing the same for axial movement; and yarn guide means guiding the yarn after it passes through said twist tube along a path part of which extends transversely across at least a portion of said tube so that the yarn itself at said part of said path will directly engage the tube to limit axial movement thereof.

2. In a high speed false twist assembly, in combination, rotary yarn twisting means including an elongated twist tube which tends to shift axially during twisting of yarn passing through said tube; rotating means cooperating with said tube of said twist means for rotating said tube while freeing the same for axial movement; and yarn guide means guiding the yarn after it passes through said twist tube along a path part of which extends transversely across at least a portion of said tube so that the yarn itself at said part of said path will directly engage the tube to limit axial movement thereof, said yarn guide means including a plurality of stationary yarn guide elements which direct the yarn as it leaves said tube first in a direction approaching the reverse of the direction in which the yarn leaves said tube, then along said part of said path in a direction transverse to said tube, and finally in the same direction as when the yarn leaves said tube.

3. In a high speed false twist assembly, in combination, rotary yarn twisting means including an elongated twist tube which tends to shift axially during twisting of yarn passing through said tube; rotating means cooperating with said tube of said twist means for rotating said tube while freeing the same for axial movement; and yarn guide means guiding the yarn after it passes through said twist tube along a path part of which extends transversely across at least a portion of said tube so that the yarn itself at said part of said path will directly engage the tube to limit axial movement thereof, said part of said path extending across the end of said tube through which the yarn passes when leaving said tube so that the yarn at said part of said path engages said end of said tube to limit axial movement thereof.

4. In a high speed false twist assembly, in combination, rotary yarn twisting means including an elongated twist tube which tends to shift axially during twisting of yarn passing through said tube; rotating means cooperating with said tube of said twist means for rotating said tube while freeing the same for axial movement; and yarn guide

means guiding the yarn after it passes through said twist tube along a path part of which extends transversely across at least a portion of said tube so that the yarn itself at said part of said path will directly engage the tube to limit axial movement thereof, said tube being formed with an exterior annular groove and said part of said path extending along the interior of part of said groove so that a surface of said tube which defines part of said groove will engage the yarn at said part of said path whereby the yarn limits axial movement of said tube.

5. In a high speed false twist assembly, in combination, rotary yarn twisting means including an elongated twist tube which tends to shift axially during twisting of yarn passing through said tube; rotating means cooperating with said tube of said twist means for rotating said tube while freeing the same for axial movement; and yarn guide means guiding the yarn after it passes through said twist tube along a path part of which extends transversely across at least a portion of said tube so that the yarn itself at said part of said path will directly engage the tube to limit axial movement thereof, said tube having an exterior annular flange and said part of said path extending across said tube adjacent to said flange closer to said tube than the outer periphery of said flange and at the

side of said flange which is directed toward the end of said tube through which the yarn passes when leaving said tube, so that the yarn itself will be engaged by the tube to limit axial movement thereof.

6. In a high speed false twist assembly, in combination, rotary yarn twisting means including an elongated twist tube which tends to shift axially during twisting of yarn passing through said tube; rotating means cooperating with said tube of said twist means for rotating said tube while freeing the same for axial movement; and yarn guide means guiding the yarn which leaves said tube along a path placing the yarn at a location to engage at least part of said tube during axial movement thereof so as to limit said axial movement.

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